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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,651	02/25/2005	Hidekazu Kimura	Q86488	7987

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EXAMINER	
HAN, KWANG S	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,651	KIMURA ET AL.	
	Examiner	Art Unit	
	Kwang Han	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-13,15-27 and 29-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-13,15-27 and 29-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/25/05, 6/29/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

METHOD FOR OPERATING FUEL CELL, FUEL CELL, AND MOBILE DEVICE AND MOBILE PHONE USING SAME

Examiner: K. Han SN: 10/525,651 Art Unit: 1795 September 1, 2009

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 23, 2009 has been entered. Claims 3, 7, 10, 13, 17, 20, and 23 were amended. Claims 30 and 31 were added.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 10 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The recitation of "wherein the diameter of said at least one hole gradually decreases as said at least one hole extends from said side of said fuel electrode catalyst layer to said opposite side" does not have support within the specification.

Claim Rejections - 35 USC § 103

6. Claim 1, 3, 5, 6, 7, 11, 15-17, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. (JP 2002-231290, machine translation) in view of Takahashi (JP 08-287941, machine translation) and Lehman et al (US 5879826) is maintained. The rejection has been repeated below for convenience.

Regarding claim 1, Hatanaka et al. is directed to a fuel cell (32) comprised of the following:

- a fuel electrode [0003],
- an oxidant electrode [0003], and
- generates electric power based on a supply of organic liquid fuel [Abstract].

Hatanaka discloses carbon dioxide which is emitted as a by-product of power generation and adheres to the fuel electrode [0026] which is removed with the use of convection [0027] but is silent towards the use of a vibration generating unit.

Takahashi teaches electrode plates which form bubbles during charging that are adhered to the surface of the electrode which are removed with the use of a vibration generating unit to remove gas bubbles which form on an electrode for the benefit of quickly removing them to reduce electrical resistance [Abstract].

Hatanaka and Takahashi are analogous art because they are both concerned with removing bubbles from the surface of an electrode. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Takahashi's vibration unit in Hatanaka's fuel electrode for the benefit of quickly removing adhered gas bubbles using vibration to reduce blockage and increase flow of fuel to the electrode.

Lehman et al. teaches auxiliary devices (parasitic loads) of the fuel cell which are driven by the output of the fuel cell main unit for the benefit of supporting the functioning of the fuel cell (2:44-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to power the vibration generating unit of Hatanaka modified by Takahashi by an output of the fuel cell because Lehman teaches it is well recognized in the art that sub-system's in support of the operation of the fuel cell can draw a parasitic load from the fuel cell.

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their

respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art. (MPEP 2143)

Regarding claim 3, the teachings of Hatanaka, Takahashi and Lehman as discussed above are herein incorporated. Takahashi further discloses the use of a power applying unit (actuation current feed means, 15) [0036] which provides alternating electric power [0022] to allow the vibration generating unit to oscillate.

Regarding claims 5 and 15, Takahashi further discloses a vibration generating unit comprised of a piezoelectric vibrator [0022].

Regarding claims 6 and 16, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka et al. is silent as to the placement of a vibration generating unit arranged on the fuel cell main unit.

Takahashi teaches the placement of the vibration generating unit within the main power generating unit for the benefit of providing direct vibration to the electrodes [0033]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the vibration generating unit on the fuel cell main unit because it would provide direct vibration to the electrodes to remove the evolved gases.

Regarding claims 7 and 17, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka et al. is silent as to the use of a holding substrate which transmits vibrations.

Takahashi teaches the use of a substrate (20, base of a tub) which is connected to the battery casing (1; Drawing 8) [0033, 0038] with water for the benefit of transferring vibrations to the entire power generating unit. It would have been obvious

to one of ordinary skill in the art at the time of the invention to apply Takahashi's holding substrate and battery casing in Hatanaka's fuel cell because Takahashi teaches it has the benefit of providing a medium to directly transfer the vibrations to the entire surface of the electrodes.

Regarding claim 11, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka et al. is further directed towards a portable information device [0001] comprising a body (20) and a fuel cell which is arranged in said body (10) [Abstract].

Regarding claim 26, Hatanaka is directed towards an operation method of a fuel cell comprised of the following:

- generating electric power by supplying organic liquid fuel to a fuel electrode [0021], and
- oxidant to an oxidant electrode [0023].

Hatanaka discloses carbon dioxide which is emitted as a by-product of power generation and adheres to the fuel electrode [0026] which is removed with the use of convection [0027] but is silent towards the method of vibration.

Takahashi teaches electrode plates which form bubbles during charging that are adhered to the surface of the electrode which are removed with the use of a vibration generating unit to remove gas bubbles which form on an electrode for the benefit of quickly removing them [Abstract].

Hatanaka and Takahashi are analogous art because they are both concerned with removing bubbles from the surface of an electrode. It would have been obvious to

one of ordinary skill in the art at the time of the invention to apply Takahashi's vibration method in Hatanaka's fuel electrode for the benefit of quickly removing adhered gas bubbles.

Lehman et al. teaches auxiliary devices (parasitic loads) of the fuel cell which are driven by the output of the fuel cell main unit for the benefit of supporting the functioning of the fuel cell (2:44-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to power the vibration generating unit of Hatanaka modified by Takahashi by an output of the fuel cell because Lehman teaches it is well recognized in the art that sub-system's in support of the operation of the fuel cell can draw a parasitic load from the fuel cell.

Regarding claim 27, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Takahashi further discloses the use of a power applying unit (actuation current feed means, 15) [0036] which provides alternating electric power [0022] to allow the vibration generating unit comprised of a piezoelectric vibrator [0022] to oscillate.

7. Claim 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1 and 11 above and further in view of Ohara et al. (US 6215272) has been maintained. The rejection has been repeated below for convenience.

Regarding claims 3 and 13, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Takahashi discloses the use of a power

applying unit (actuation current feed means, 15) [0036] which provides alternating electric power [0022] to allow the vibration generating unit to oscillate but is silent towards a power applying unit converting direct current into alternating current.

Ohara teaches a fuel cell device which uses a DC-AC converter for converting a direct current power into an alternating current for the use by an auxiliary device necessary for driving the fuel cell device [Abstract]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a DC-AC converter in the fuel cell of Hatanaka, Takahashi, and Lehman because Ohara teaches it provides alternating current to auxiliary devices which are necessary for driving the fuel cell.

8. Claim 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1 and 11 above and further in view of Kawatsu (US 5925476) has been maintained. The rejection has been repeated below for convenience.

Regarding claims 2 and 12, the teachings of Hatanaka et al., Takahashi, and Lehman et al. as discussed above are herein incorporated. Hatanaka, Takahashi, and Lehman are silent as to the use of a control unit which controls the operation of a vibration generating unit based on the output of voltmeters and ammeters.

Kawatsu teaches a fuel cell system which uses a control unit (38) that carries out the routine of controlling the fuel cell output based upon the measurements of a voltmeter (32) and ammeter (233) for the stack of fuel cells to provide controlled output (14:4-11; 16:46-17:9). It would have been obvious to one of ordinary skill in the art at

the time of the invention to use a control unit that provides control of the vibration unit of Hatanaka, Takahashi, and Lehman's vibration generating unit using voltmeters and ammeters on both the load and fuel cell components because Kawatsu teaches it enables the stack of fuel cells to be operated at a desired output voltage. To one of ordinary skill in the art at the time of the invention it would have been obvious to apply a voltmeter to the load because the load would have an effect on the desired output voltage of the fuel cell.

9. Claims 8, 9, 18, 19, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1, 11, and 26 above and further in view of Gyoten et al. (US 6117579) and Yamada et al. (US 5432023).

Regarding claims 8, 9, 18 and 19, the teachings of Hatanaka et al., Takahashi, and Lehman et al. as discussed above are herein incorporated. Hatanaka, Takahashi, and Lehman are silent as to a porous separator having a hydrophilic or hydrophobic coating material.

Gyoten et al. teaches the use of a porous current collector with a porous electrode layer composed of a hydrophilic material with random additions of water repellency (hydrophobic finish) to provide channeling and easy removal of water within the electrodes (2:41-48; 2:56-3:6). The fuel cell stack (Figure 1) shows the separator (5) on the oxidant side of one cell and the fuel electrode side of the adjacent cell. It would have been obvious to one of ordinary skill in the art at the time of the invention to

apply Gyoten's electrode layer with hydrophilic and hydrophobic regions in Hatanaka modified by Takahashi's porous separator for the benefit of providing channeling and easy removal of water from the electrodes.

Yamada teaches a fuel cell stack with a electrolyte layer having water absorbing and water retaining properties to be in contact and exchanging water between the oxidizing electrode and fuel electrode to prevent the interior of the membrane and the electrodes from drying out (43:52-44:32). It would have also been obvious to one of ordinary skill in the art at the time of the invention to use a membrane with water retaining/absorbing properties in Hatanaka modified by Takahashi's fuel cell because Yamada teaches this prevents the interior of the membrane and the electrodes from drying out.

Regarding claim 29, the teachings of Hatanaka et al., Takahashi, and Lehman et al. as discussed above are herein incorporated. Hatanaka et al., Takahashi, and Lehman are silent as to the vibrating the fuel electrode when the output of the fuel cell is lower than a threshold.

Gyoten et al. teaches the use of a control unit which controls a vibration device and produces vibration intermittently or based on the output of a fuel cell to improve performance by removing blockage in the gas channels or the pores of an electrode (3:38-48; Claim 14). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Gyoten's control unit to vibrate the fuel electrode of Hatanaka modified by Takahashi when the output is lower than a threshold value for maintaining the fuel cell performance by using feedback.

10. Claims rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1, 11, and 26 above and further in view of Taniguchi et al. (US 6083638) on claims 8, 9, 18, and 19 has been withdrawn in view of Applicant's arguments.

11. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1 and 11 above, and further in view of Maricle et al. (US 4125676).

Regarding claims 10 and 20, the teachings of Hatanaka et al., and Takahashi as discussed above are herein incorporated. Hatanaka and Takahashi are silent as to the use of a current collector with holes at a side of the fuel electrode catalyst layer which are smaller than those on the opposite side.

Maricle et al. teaches a current collector (110), fuel electrode catalyst layers (104) in contact with the electrolyte layer (108) and further teaches layers adjacent to the current collector which are comprised of thick large pore (holes) layers adjacent to the separator and thinner smaller pore (holes) layers adjacent to the catalyst layer to provide free flow of a reactant gas yet still maintain separation (6:23-44). It would have been obvious to one of ordinary skill in the art at the time of the invention to have Maricle's current collector with differing pore layers in Hatanaka modified by Takahashi's fuel cell for the benefit of providing free flow of reactant gas to the catalyst layer yet maintaining separation.

Maricle further teaches the pore size has an effect on the extent to which the gas distribution stays as desired on the surface and permit a substantially free flow of a reactant gas (6:31-44) teaching the pore size distribution as a result effective variable. It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the pore sizes and transition of sizes at the current collector since it has been held that discovering the optimum ranges for a result effective variable such as pore size involves only routine skill in the art in the absence of showing of criticality in the claimed range (MPEP 2144.05) In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

12. Claims 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claim 11 above, and further in view of Tanaka et al. (US 2002/0187380) and Kitamura et al. (US 4883717) is maintained. The rejection is repeated below for convenience.

The teachings of Hatanaka et al., Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka and Takahashi are silent towards the use of an inner and outer body with a vibration damping material which connects the two bodies.

Tanaka et al. teaches the use of an outer body (10, housing case) and an inner body (52, fuel cell stack) which is contained in the outer body and connected to each other by way of mounts (86, 88) for the benefit of preventing positional deviation from vibration and deformation [0059] by isolating a section of the fuel cell stack to the outer housing but is silent towards the mounts being composed of a vibration dampening

material such as butyl rubber. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Tanaka's inner and outer body with mounts in Hatanaka modified by Takahashi's fuel cell powered device for the benefit of preventing positional deviation from vibration and deformation.

Kitamura et al. teaches vibration dampening between one part to another with the use of butyl based material (6:23-24) which is interposed between two plates (2:17-23) for the benefit of workability and increased vibration-damping ability to isolate the vibration to reduce noise (1:17-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Kitamura's butyl based material in Hatanaka modified by Takahashi and Tanaka's fuel cell mounts between the inner and outer body because Teklanika teaches it for the benefit of dampening and isolating vibration of the electrodes of the fuel cell from the rest of the device to minimize positional deviation and deformation and Kitamura teaches it minimizes the noise generated.

13. Claims 22, 23, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi, Lehman et al., Tanaka et al., and Kitamura et al. as applied to claims 11 and 21 above, and further in view of Little (US 5642413) is maintained. The rejection is repeated below for convenience.

Regarding claims 22, 23, 30, and 31, the teachings of Hatanaka et al., Takahashi, Lehman et al., Tanaka et al., and Kitamura et al. as discussed above are herein incorporated. Modified Hatanaka is silent as to an information notifying unit

which transmits vibrations. Hatanaka et al. further teaches a fuel cell system which is used as a power supply for portable electronic devices such as cell phones [0001].

Little teaches the use of an information notifying unit (16) which is arranged in a inner body (28) which transmits vibration to an outer body (14) (4:27-40) for the benefit of alerting a user to a call [Abstract]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the vibration generating unit of modified Hatanaka's fuel cell as a notifying unit because Little teaches that a vibration generating unit (information notifying unit) can be used for the benefit of providing notification to a user by way of vibration. The information notifying unit not providing vibrations would be the second state and when the vibrations are activated, would be the first state.

14. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi, Lehman et al., and Little is maintained. The rejection is repeated below for convenience.

Regarding claim 25, Hatanaka et al. is directed to a fuel cell (32) comprised of the following:

- a fuel electrode [0003],
- an oxidant electrode [0003], and
- generates electric power based on a supply of organic liquid fuel [Abstract].

Hatanaka discloses carbon dioxide which is emitted as a by-product of power generation and adheres to the fuel electrode [0026] which is removed with the use of

convection [0027] but is silent towards the use of a vibration generating unit. Hatanaka et al. further discloses a fuel cell system which is used as a power supply for portable electronic devices such as cell phones [0001].

Takahashi teaches electrode plates which form bubbles during charging that are adhered to the surface of the electrode which are removed with the use of a vibration generating unit to remove gas bubbles which form on an electrode for the benefit of quickly removing them to reduce electrical resistance [Abstract].

Hatanaka and Takashi are analogous art because they are both concerned with removing bubbles from the surface of an electrode. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Takahashi's vibration unit in Hatanaka's fuel electrode for the benefit of quickly removing adhered gas bubbles using vibration to reduce blockage and increase flow of fuel to the electrode.

Lehman et al. teaches auxiliary devices (parasitic loads) of the fuel cell which are driven by the output of the fuel cell main unit for the benefit of supporting the functioning of the fuel cell (2:44-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to power the vibration generating unit of Hatanaka modified by Takahashi by an output of the fuel cell because Lehman teaches it is well recognized in the art that sub-system in support of the operation of the fuel cell can draw a parasitic load from the fuel cell.

Little teaches the use of an information notifying unit (16) which is arranged in a inner body (28) which transmits vibration to an outer body (14) (4:27-40) for the benefit of alerting a user to a call [Abstract]. It would have been obvious to one of ordinary skill

in the art at the time of the invention to use the vibration generating unit of modified Hatanaka's fuel cell as a notifying unit for a cell phone because Little teaches that a vibration generating unit (information notifying unit) can be used for the benefit of providing notification to a user by way of vibration.

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art. (MPEP 2143)

Response to Arguments

15. Applicant's arguments filed May 26, 2009 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

(a) the Lehman reference discloses supporting apparatuses that are indispensable for continuous electrical power generation in the fuel cell that are powered by a parasitic load from the fuel cell which would exclude a dispensable apparatus such as a vibration generating unit,

(b) the Examiner acknowledges Kawatsu does not disclose a voltmeter connected to a load,

(c) the Gyoten and Yamada reference do not show water stored in the fuel electrode side and do not form water in a chemical reaction,

(d) there is no motivation in the Little reference or any of the other references to have the vibrator vibrate both the outer body and the fuel electrode.

In response to Applicant's arguments, please consider the following comments:

(a) Lehman teaches that any auxiliary device can be powered with a parasitic load in support of the operation of the fuel cell (2:44-45) as discussed in the office action. It is obvious to one of ordinary skill in the art whether the auxiliary device is dispensable or indispensable, that as long as the device supports the operation of the fuel cell, a parasitic load can be provided to operate the device as taught by Lehman,

(b) as discussed in the rejection above Kawatsu does disclose a voltmeter,

(c) the limitations of the claim do not suggest or require that water be formed by a chemical reaction. Yamada teaches that an electrolyte can provide water transfer as required between an oxidizing electrode and a fuel electrode to prevent drying out of the membrane itself or the electrodes thereby providing sufficient motivation to provide a hydrophilic/hydrophobic layer on the fuel electrode side,

(d) the outer body and the fuel cell are physically connected as part of the overall phone structure as taught by Little. Any vibrations applied to one part would inherently be transferred to the other components of the structure as would be well known to one of ordinary skill in the art.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-

5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795